

Eruption times of deciduous teeth in a group of Sinhalese children attending well baby clinics

M. S. Chandrasekera¹

The Ceylon Journal of Medical Science 1994; 37: 17-21

Summary

Eruption times of the deciduous dentition of 4396 Sinhalese children (2195 males and 2201 females) of low socio-economic status from five districts in Sri Lanka have been studied. The first tooth to erupt in both genders is the mandibular central incisor, which in males erupt at 10.6 months and in females at 10.0 months. An early emergence and late completion was observed in males whereas in the females a late emergence and early completion was observed. The eruption times of corresponding teeth showed significant differences between the genders. When compared with Caucasians from Britain, Northern and Western Europe, those of African origin living in Britain, Japanese and Koreans, a delayed eruption of the deciduous teeth was observed in the Sinhalese of low socio-economic status, but the delay was not as marked as that in Bengalee children.

Key Words: Deciduous dentition, tooth eruption, ethnic variation, gender, Sinhalese.

Introduction

The time of eruption of the deciduous and permanent dentitions are important criteria for the assessment of growth and maturation in childhood and adolescence. There is no reported data on the times of eruption of the deciduous dentition in the Sinhalese, although the norms for the eruption times of the permanent dentition has been published recently (1). In that study it has been shown that the eruption in the permanent dentition is significantly earlier in the higher socio-economic groups in both genders.

The time of eruption of the deciduous teeth in different populations around the world have been reported to be influenced by gender (2, 3), ethnicity (4, 5) and socio-economic status (6, 7).

The aim of the present study was to establish the eruption times for the deciduous dentition in Sinhalese children of low socio-economic status attending well baby clinics.

Population and Methods

Although the study was designed to include children randomly selected from nine districts in the nine provinces, work in the Anuradhapura, Galle, Ampara and Badulla districts could not be carried out due to the unsettled conditions prevailing in the country during the study period 1988 to 1990. The study was thus limited to Kandy, Kurunegala, Kegalle, Puttalam and Colombo districts. From each of the five districts three Medical Officers of Health areas were selected randomly. All children attending well baby clinics on the day of the field visit were included in the study. A total of 78 field visits were made with 20 visits to Kandy and Kurunegala, 19 visits to Kegalle, 9 visits to Puttalam and 10 visits to Colombo. Socio-demographic data such as name, gender, date of birth as well as birth weight were obtained from the clinic cards and were cross-checked by interviewing the parents in order to improve the reliability of the data. Parental occupation was also recorded at the interview. Children with a history of premature birth, chronic systemic illness, congenital abnormalities and children with a birth weight less than 2.5 kilograms were excluded from the study. Steps were taken to avoid duplication of the same child in the study.

¹ Senior Lecturer, Department of Anatomy, Faculty of Medicine, University of Peradeniya, Peradeniya.



Ethnic groups other than Sinhalese were excluded from the study.

The oral cavities were examined by the author under natural daylight, by direct inspection with the aid of a mirror where necessary. Teeth were recorded as present or absent. Any tooth which had at least partly penetrated through the gum was counted as present. A total of 4396 children, 2195 males and 2201 females were examined. The socio-economic status was determined according to the occupational classification used by the Central Bank of Ceylon, 1984 (8). Based on this 98% of the children in this study were from the low socio-economic group. This study is thus restricted to Sinhalese children of low socio-economic status from five districts in Sri Lanka.

Results

Table 1 gives the distribution of children and the number of visits to each of the five districts studied. Table 2 gives the age and gender distribution of the study sample.

Analysis of data to calculate the mean eruption times of each tooth for both genders was carried out using a modification of Karber's method as described by Hays and Mantel (9). Student's t-test was carried out to test the significance between the eruption times of teeth in the two genders. The values are given in table 3.

Discussion

In this group of Sinhalese children of low socio-economic status, the first tooth to erupt in the deciduous dentition is the mandibular central incisor in both genders. The mandibular second molar also erupts before the maxillary second molar in both genders. In respect of the other teeth, the maxillary counterparts erupt earlier than the mandibular in both genders.

However, a previous study (10) of Caucasian male and female children of high socio-economic status originating from Northern and Western Europe has shown that deciduous mandibular teeth erupt earlier than their corresponding maxillary teeth, with the exception of the deciduous lateral incisor. In the same study no significant differences in the eruption times were observed between the genders. In a study of Jewish Israeli children (11) it has been shown that the number of erupted teeth at different ages were similar in both genders. However, another study (3) of French-Canadian children showed that males have earlier eruption than the females. In the present study earlier eruption in the males is limited to the anterior teeth only. The difference in the mean eruption times of corresponding teeth between males and females for all deciduous teeth except the mandibular canine were significant (Table 3).

Table 1. Distribution of children in the five districts

District	No. of Children	No. of Visits
Kandy	1758	20
Kurunegala	1021	20
Colombo	355	10
Kegalle	1091	19
Puttalam	171	9

Table 2. Age and Sex Distribution of the Study Sample

Age group (month)	No. of Children	
	Males	Females
5	109	122
6	102	90
7	120	117
8	123	130
9	124	141
10	119	119
11	79	88
12	74	77
13	66	65
14	54	62
15	45	62
16	65	81
17	56	75
18	113	103
19	86	96
20	61	42
21	51	60
22	51	50
23	74	47
24	72	58
25	49	53
26	49	52
27	43	51
28	34	41
29	63	64
30	69	48
31	33	35
32	33	22
33	19	8
34	20	20
35	27	11
36	12	11
Total	2195	2201

In males the first deciduous tooth erupts at 10.6 months and the dentition is completed at the age of 29.2 months, the eruption being completed in 18.6 months. In females the first deciduous tooth erupts at 10.9 months and the dentition is completed at 28.9 months, the eruption being completed in 18.0 months. In general males show an early emergence and late

completion while females show a late emergence and early completion of the deciduous dentition.

The gender difference in the eruption times seen in the present study may be due to the low socio-economic status and/or cultural differences in feeding habits.

Table 3. Mean eruption times of the deciduous dentition (in months)

Tooth	Males mean \pm sd	Females mean \pm sd	t values	Level of Significance
Mandibular				
Cental incisor	10.6 \pm 2.7	10.9 \pm 2.8	3.1114	< 0.001
Lateral incisor	15.3 \pm 3.5	15.9 \pm 3.2	5.3763	< 0.001
Canine	21.4 \pm 3.9	21.5 \pm 3.4	0.8710	< 0.1
First molar	18.5 \pm 2.9	18.0 \pm 2.9	5.2916	< 0.001
Second molar	28.6 \pm 4.2	28.2 \pm 3.8	4.3591	< 0.001
Maxillary				
Cental incisor	11.4 \pm 2.3	12.1 \pm 2.4	8.5784	< 0.001
Lateral incisor	12.9 \pm 3.1	13.4 \pm 2.9	4.9471	< 0.001
Canine	20.0 \pm 3.4	20.4 \pm 3.5	3.6343	< 0.001
First molar	16.9 \pm 2.8	16.7 \pm 2.9	2.1293	< 0.01
Second molar	29.2 \pm 4.1	28.9 \pm 3.8	2.4590	< 0.01

In respect of the ethnic variation, in a comparative study between persons of West African origin residing in Britain and white Caucasian children (4) an earlier eruption of the deciduous dentition was observed in the African children. The same study showed that there is no significant difference in the socio-economic distributions between the various samples.

However, a report from Tunisia (7) has stated that the eruption times of the deciduous teeth is correlated with the socio-economic status.

Delayed eruption times for the deciduous dentition of Bengalee children (320 males and 268 females) than for Japanese, Koreans, American whites have been reported (5). The eruption times of the children in the present study is later than those for white Caucasians, West Africans living in Britain, Japanese, Koreans and North American whites (4, 5). However, the eruption times of the Sinhalese in the present study is not as late as that given for Bengalee children. As socio-economic status is not mentioned in these studies (4, 5) it cannot be

ruled out that the delayed eruption times seen in the present study in Sinhalese children is due to socio-economic status.

If the socio-economic status has any influence on the eruption of the deciduous dentition, further studies in a representative sample of Sinhalese children of high socio-economic status are necessary before definite conclusions are made on the norms for the deciduous tooth eruption times for the Sinhalese, as has been done for the permanent dentition (1).

Acknowledgements

This study was funded by a grant from the Natural Resources Energy and Science Authority of Sri Lanka (Grant No. RG/88/M/2).

I wish to thank Professor E. R. Wikramanayake, Department Anatomy, Faculty of Medicine, Peradeniya and Dr. S. R. U. Wimalaratna of the Faculty of Dental Sciences, Peradeniya for help during the preparation of the paper and Miss W. C. Mohotti for Secretarial assistance.

References

1. Nanayakkara C. D, Chandrasekera M S, Wikramanayake E. R. Norms for the eruption of the permanent dentition in the Sinhalese. *Ceylon Journal of Medical Science* 1993; 36 (1): 3-7.
2. Tanguay R, Buschang P H, Demirijian A. Sexual dimorphism in the emergence of deciduous teeth: its relationship with growth components in height. *American Journal of Physical Anthropology* 1986; 69 (4): 511-515.
3. Robinow M, Richard T W, Anderson M. Eruption of deciduous teeth. *Growth* 1942; 6: 17-133.
4. Lavelle C L B. A note on the variation in the timing of deciduous tooth eruption. *Journal of Dentistry* 1975; 3: 67-70.
5. Banerjee P, Mukherjee S. Eruption of deciduous teeth among Bengalee children. *American Journal of Physical Anthropology* 1980; 6: 357-358.
6. Meredith H V. Order and age of eruption of the deciduous dentition. *Journal of Dental Research* 1946; 5: 43-66.
7. Bambach M, Saracci R, Young H B. Emergence of deciduous teeth in Tunisian children in relation to sex and social class. *Human Biology* 1973; 45: 435-444.
8. Report on consumer finances and socio-economic surveys, 1981/1982. Department of Statistics, Central Bank of Ceylon 1984.
9. Hayes R L, Mantel N. Procedures for computing age of eruption. *Journal of Dental Research* 1958; 37: 938-947.
10. Nanda R S. Eruption of human teeth. *American Journal of Orthodontics* 1960; 46 (5): 363-378.
11. Shuper A, Sarnat H, Mimouni F, Mimouni M, Varsano I. Deciduous tooth eruption in Israeli children. *Clinical Paediatrics*. 1985; 4(6): 340-344.